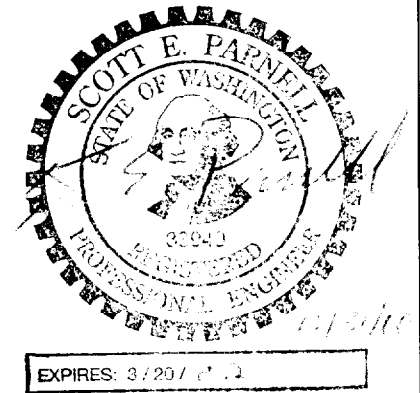



EXHIBIT E

TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING



1	11-01-00	Issued for Award	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	FMC
0	7/26/00	Issued for Bid	SEP	MHS	JAG	FMC
REV.	DATE	REASON FOR REVISION	ORIGINATOR	CHECKER	GROUP SUPVR	PROJECT ENGR/DES
		RICHLAND ENVIRONMENTAL RESTORATION PROJECT	JOB NO. 22192			
			SPECIFICATION NO. 0100B-SP-C0001			
			SHEET	1	of	36

BHI-DIS. 5/27 11/2/2000

TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING

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Attachment 1 Supplemental Waste Acceptance Criteria for Bulk Shipments to the Environmental Restoration Disposal Facility

TECHNICAL SPECIFICATION FOR EARTHWORK AND EXCAVATED MATERIALS HANDLING

1.0 GENERAL

1.1 SUMMARY

This specification establishes quality and workmanship requirements, and defines how quality is measured for earthwork and excavated materials handling activities.

1.2 ABBREVIATIONS

The abbreviations listed below, where used in this specification, shall have the following meanings:

ACM	asbestos-containing material
AOC	area of contamination
ANSI	American National Standards Institute
ASCII	American Standard Code of Information Interchange
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BCM	bank cubic meter
CADD	computer aided drafting and design
CFR	Code of Federal Regulations
COPC	contaminant of potential concern
DOT	Department of Transportation
ERC	Environmental Restoration CONTRACTOR Team
ERDF	Environmental Restoration Disposal Facility
FGCC	Federal Geodetic Control Committee
LCM	loose cubic meter
MAQDSR	Monthly Air Quality Data Summary Record
NAD83 ('91)	North American Datum of 1983, adjusted in 1991
NAVD88	North American Vertical Datum of 1988
NESHAP	National Emissions Standards of Hazardous Air Pollutants
NGVD29	National Geodetic Vertical Datum of 1929
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
QA/QC	Quality Assurance/Quality Control
RCW	Revised Code of Washington
SSRS	Subcontractor Submittal Requirements Summary
t	Metric Ton

WAC Washington Administrative Code
WSDOT Washington State Department of Transportation

1.3 REFERENCES

The following references contain general information about the Hanford Site, geophysical interpretations of specific waste sites within the scope of work, acceptance criteria for export of contaminated material, and permit and regulatory criteria for certain activities at the Hanford Site.

PNL-6415, Rev. 11, UC-600	Hanford Site National Environmental Policy Act Characterization
BHI-00139 Rev. 3	Environmental Restoration Disposal Facility Waste Acceptance Criteria
BHI-DE-01, CADP-02	Drawing Format and Standards Guide
CCN # 066634	Best Management Practices for Wet Cleaning and/or Decontamination of Equipment in Contaminated Areas
WA-R-10-000F	Hanford Storm Water NPDES Permit
WHC-SD-EN-TI-220	100 B/C Reactor Site Technical Baseline Report

1.4 CODES, STANDARDS, LAWS, AND REGULATIONS

Unless otherwise approved or shown, the following Codes, Standards, Laws, and Regulations of the latest issue, at the time of bid, shall apply to establish the minimum requirements for activities within the scope of this specification. Referenced test methods, specifications, and recommended practices are to be used to verify material properties and to identify acceptable practices. Failure to identify applicable codes and standards does not negate the requirement to be knowledgeable of or to comply with applicable codes, standards, laws, and regulations.

10 CFR 835	Occupational Radiation Protection
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emissions Standards for Hazardous Air Pollutants
40 CFR 503	Standards for the Use or Disposal of Sewage Sludge
49 CFR 172.504	General Placarding Requirements

49 CFR 393	Parts and Accessories Necessary for Safe Operation
49 CFR 566	Manufacturer Identification
49 CFR 567	Certification
49 CFR 571	Federal Motor Vehicle Safety Standards
ANSI/ASME	Applicable B30 Standards
RCW 46.37	Vehicle Lighting and Other Equipment
RCW 46.44	Size, Weight, Load
ST 4508	State Waste Discharge Permit for Hydrotest, Maintenance, and Construction Discharges
ST 4509	State Waste Discharge Permit for Cooling Water and Condensate
ST 4510	Hanford Stormwater NPDES PermitWAC 173-216 State Waste Discharge Permit Program
WAC 173-303	Washington State Dangerous Waste Regulation
WAC 196	Professional Engineers and Land Surveyors
WAC 332-130	Minimum Standards for Land Boundary Surveys and Geodetic Control Surveys and Guidelines for the Preparation of Land Descriptions
WSDOT M 41-10	Standard Specifications for Road, Bridge, and Municipal Construction

1.5 DEFINITIONS

1.5.1 Area of Contamination (AOC)

The plan area defined as 25m (82 ft) beyond the limits of excavation.

1.5.2 Construction Drawings

Drawings supplied by SUBCONTRACTOR, per Exhibit "I", to be used for construction.

1.5.3 Container Handler

Generic term for manufacturers' standard equipment, (e.g., a haul truck), for handling the specified containers.

1.5.4 Container Transfer Facility

The facilities and associated roadways and surfaced areas adjacent to the excavation sites devoted to radiological surveying of the containers, container decontamination, container staging, container transfer to and from uncontaminated haul vehicles, and waste tracking.

1.5.5 Contaminated Material

Soil (ranging from silt to boulders) and construction material (concrete, timbers, piping, wire, etc.) with contaminant levels above cleanup levels.

1.5.6 Contaminated Material Potentially Designated as Dangerous Waste

That portion of contaminated material subject to determination as to whether it is a dangerous waste. This determination is not within the scope of work, and shall be made by the CONTRACTOR.

1.5.7 Dangerous Waste Storage Area

An area used to store materials potentially designated as dangerous waste, that is in close proximity to, but outside of, the AOCs.

1.5.8 Disturbed Areas

Waste site excavations, access ramps, haul roads, the Container Transfer Facility, and ancillary facilities.

1.5.9 Project Drawings

Drawings supplied by CONTRACTOR and contained in Exhibit "F".

1.5.10 Stripping

Removal and storage of uncontaminated surface material for future use as excavation backfill, including roots, organic materials, vegetation less than 3 ft high, debris, cobbles, and boulders.

1.5.11 Uncontaminated Material

All soil (ranging from silt to boulders) and construction material (concrete, timbers, piping, wire, etc.) excavated to gain access to contaminated material and verified at contaminant levels below the cleanup levels. Verification is not within the Scope of Work.

Areas or materials designated by the CONTRACTOR as "uncontaminated", may require radiological posting prior to verification of contaminant levels below the cleanup levels.

1.5.12 Waste Profile

The categorization of excavated materials in accordance with Environmental Restoration Disposal Facility (ERDF) waste acceptance criteria and the Supplemental Waste Acceptance Criteria for Bulk Shipments to the ERDF (Attachment 1) by physical characteristics (e.g., soil, debris), chemical characteristics, contaminants present (e.g. specific radionuclide) and the level of contamination.

1.6 TECHNICAL SUBMITTALS

All required submittals stated herein and elsewhere in this specification shall be submitted for review in accordance with Exhibit "I", Subcontractor Submittal Requirement Summary (SSRS).

1.7 EARTHWORK AND EXCAVATED MATERIALS HANDLING DESIGN

Develop and submit a detailed design for the Container Transfer Facility (if constructing a new facility), haul roads, access ramps, contaminated area and pipeline removals, and stockpiles, as specified or shown. The design shall incorporate the use of temporary Container Transfer Facilities and/or frisking stations, as needed. The design shall include all information necessary (consistent with standard engineering practice) to complete earthwork and excavated materials handling activities specified herein. The design shall use the project drawings contained in Exhibit "F" and the Technical Specifications contained in Exhibit "E" as a guide. The reports, drawings, and specifications issued for construction and plans affecting safety shall be approved and stamped by a Professional Engineer registered in the State of Washington.

1.7.1 General Design Requirements

- The design layout shall use the existing site horizontal and vertical control, as established during the execution of Section 3.1.1.3.
- Existing locations and grades of surface improvements shown on the project drawings shall be verified.
- The design shall address engineering properties of waste site materials, such as slope stability in excavations, in situ moisture in regard to dust control, compaction requirements, size distribution in regard to material handling, and other applicable considerations.
- All facilities and infrastructure necessary to support this project shall be designed and sited so as to minimize or avoid impacts to cultural and natural resources.

1.7.2 Design Submittal Requirements

All design submittals shall clearly state all assumptions, conditions, and list all references used. The following submittals shall be made:

1.7.2.1 Earthwork and Excavated Materials Handling Plan

A plan that details the methods, equipment, and scheduling of activities associated with earthwork and excavated materials handling. The plan shall include, but not be limited to, the following:

- Radiological control layout
- Stripping
- Traffic control
- Excavation methods
- Erosion and runoff control
- Backfill of excavation
- Dust control of temporary and/or long-term excavation and stockpile faces
- Size-reduction method for pipe, concrete, asphalt, timber, and steel structures, to include removal and materials handling concepts
- Spill prevention and mitigation for materials such as contaminated materials, fuel, lube oil, and hydraulic oil
- Methods for protection of utilities
- Waste minimization, storage, packaging, and disposal methods
- Air emissions controls
- Management of water discharges
- Container liner handling procedures
- Decontamination methods
- Method for transferring containers to "uncontaminated zone"
- Container staging procedures (full and empty containers)
- Container waste tracking
- Method to ensure containers meet road weight restrictions

- Soil storage/Spoil pile/Stockpile areas
- Asbestos abatement
- Lead abatement

1.7.2.2 Construction Drawings

Construction drawings shall include, but not be limited to, the following:

- Road layout, sections, alignments, and grades compatible with the use intended
- Site layout plan showing proposed contaminated area, pipeline excavation plans and sections showing intended excavations and laybacks, including silt fence locations, laydown and staging areas, access ramps, if appropriate; proposed haul roads, stockpile areas, storage areas, and container transfer facilities within approved access and transportation corridors
- Traffic and Access control plan showing sign type (i.e. construction area, stop, road closed, etc.) locations and traffic flow patterns
- Container Transfer Facility plans, sections, alignments, and grades compatible with the use intended
- Fill station and hydrant tie-ins (components), pipe size, and pipe runs
- Plan and profile/section for each contaminated waste sites and pipelines.

1.7.2.3 Specifications

Technical Specifications that describe materials and equipment incorporated into the detail design that are not specified in Exhibit "E", Technical Specifications, including testing requirements and imported material properties.

1.7.2.4 Excavated Material Volume

Estimated volumes of contaminated and uncontaminated soil and lengths of piping.

1.7.2.5 Power Pole Relocation

- Stamped design drawings, site plan, details, materials specifications
- Sag and Tension and profiles
- Structural Calculations

2.0 MATERIALS AND EQUIPMENT

Unless otherwise specified, furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, quality control, testing, start-up, and completion of the work.

2.1 MATERIALS

2.1.1 Crushed Surfacing Material

Materials for surfacing of the Container Transfer Facility and Dangerous Waste Storage Area and the related haul roads shall comply with the requirements of Washington State Department of Transportation (WSDOT) M 41-10, 9-03.9(3), "Crushed Surfacing", for Top Course. The percent fracture requirement may be reduced to sixty percent (60%) from the seventy-five percent (75%) specified in the WSDOT standard specification.

2.1.2 Subgrade

Material used for subgrade under the Container Transfer Facility and the related haul roads shall be existing site materials free of brush, weeds, vegetation, grass, and other debris.

2.1.3 Fill

Material used for fill above the subgrade under the Container Transfer Facility and the related haul roads, if required by approved design submittal, shall be well graded existing site materials free of brush, weeds, vegetation, and other debris as designated by the CONTRACTOR.

2.1.4 Backfill

Backfill material for the excavations shall be uncontaminated soil from on site materials as identified by the CONTRACTOR, or material from the Pit 24 borrow sites located west of the 100 B/C area. SUBCONTRACTOR may develop borrow pit both laterally and vertically within limits of the excavation permit and as approved by the CONTRACTOR. Material for the top 610 mm (2 ft) of backfill shall contain no rock larger than 152 mm (6 in.). Materials from stripping shall be placed in the top 102 mm (4 in.) and shall be spread over the backfilled excavations.

2.1.5 Water

Water for dust control, compaction, or other approved uses is available at the location shown on the project drawings. Fill pipe shall be tagged with a "Non-potable Water" sign. Water from existing mains is not potable.

2.1.6 Soil Fixant

Soil fixant used to prevent dust movement shall be composed of non-regulated substances suitable for spray application. Prior to initiating work, manufacturer's descriptive literature describing product components and application instructions shall be submitted for approval.

2.1.7 Container Liner

The liner shall be a minimum 0.15 mm (6-mil) thick, flame resistant, clear, white, or black low-density polyethylene form-fitted type container liner (i.e., preformed with four sealed interior corner/seams) of sufficient size to allow overlapping closure and sealing after container is filled.

The liner shall be sized to fit inside the container and be folded over to completely surround the maximum container load.

The liner shall be sized such that when placed inside the empty container, the outside of the container is protected from spillage during the loading operation.

2.2 INSPECTION AND TESTING OF MATERIALS

The right to inspect and test all materials to verify conformance with the specification requirements shall be reserved by the CONTRACTOR. If requested, material samples shall be furnished to the CONTRACTOR at no additional cost. Materials not in conformance with the specification requirements shall be removed from the site and replaced at no additional expense to the CONTRACTOR.

2.3 EQUIPMENT

2.3.1 General

Equipment designs shall be adequate for the intended service, compatible with containers, and comply with CODES, STANDARDS, LAWS, AND REGULATIONS. All equipment, either owned or leased, shall comply with Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910 and 29 CFR 1926, as applicable, and the American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) B30 series of standards. Standard designs shall be modified as necessary, even if such modifications are not specified herein. Equipment shall be operated by qualified personnel to safeguard adjacent workers from injury or accidental release of contaminated material.

2.3.2 Equipment Safety

All excavation and materials handling equipment shall meet safe operating requirements (e.g. OSHA compliant). Vehicles operated on public highways shall comply with all legal requirements. The vehicles shall conform to all applicable federal and Washington State laws, including the following requirements, at a minimum: 46 RCW, 49 CFR (172 Appendix C, 393,

566, 567, 571). The vehicles shall also conform to all applicable Department of Transportation (DOT) regulations. Vehicles shall include the following minimum safety equipment: fire extinguisher, reflector kit, first aid kit, and backup alarm.

A rigging plan shall be submitted in accordance with exhibit “G” for any crane work.

Prior to mobilization provide a letter of compliance stating that the equipment has been inspected and meets the requirements of this section.

2.3.3 Materials Handling Equipment

The excavated materials handling equipment and facilities shall be fully coordinated and compatible with the CONTRACTOR supplied containers specified below.

2.3.3.1 Containers

- Container Type: roll-on/off with open top
- Inside Dimensions: 6.10 m (20 ft) long, 2.13 m (84 in.) wide, 1.32 m (52 in.) tall.
- Payload: 18.1 t (20.0 tons), maximum.
- Features: steel construction; single top-hinged or side-hinged end gate 203 mm (8 in.) diameter wheels at gate end; painted identification number; heavy duty top edge side rail and fork pockets to accommodate lifting by forklift.

2.3.4 Excavated Materials Handling Vehicles

Where required, excavated materials handling vehicles shall haul the excavated materials from the excavation sites to either the appropriate Container Transfer Facility, nearby stockpiles, or storage areas as shown on the construction drawings. The vehicles typically operate on native materials in the excavation and on crushed surfacing material in the Container Transfer Facility and Dangerous Waste Storage Area. Some operation on hard-surfaced roadways may also be required. Loads on container haul vehicles will be limited by highway weight restrictions for ERDF destined wastes. The Hanford Site highway weight limit for a tractor-trailer unit with five axles is 36.3 t (40 tons). Confirm current highway weight limits for vehicles to be operated on public roads. The SUBCONTRACTOR is responsible to ensure over the road weight restrictions are not exceeded. CONTRACTOR may impose weight-limiting controls on the ERDF transport vehicles. Any containers that exceed the weight limits controls will not be loaded and the SUBCONTRACTOR shall be responsible to offload material from the container to meet the weight restrictions. With prior approval, vehicles may be filled to heavier gross loads for internal hauling.

Haul truck hoist frames shall be the outside rail hoist type with outside to outside rail dimensions of 902 mm (35½ in.). Rails shall have no protruding objects and shall be free of additions that

could damage the integrity of the container frame rails or roller structures. Trucks should utilize nominal 102 mm (4 in.) wide hoist frame rails and have side rollers that are 102 mm (4 in.) in diameter with a face of 89 mm (3.5 in.) to 102 mm (4 in.) wide. The haul trucks and hoists shall be configured to safely handle a variety of containers from several manufacturers having the following common dimensions and characteristics:

- Gross weight of 21.0 t (23.1 tons) for container and load
- Overall container lengths of from 6.1 m (20 ft.) to 6.7m (22 ft.)
- “Doghouse” type front hook
- Front engagement (or pick up) roller diameter of 102 mm (4 in.) and face length of 142 mm (5 5/8 in.) to 165 mm (6 1/2 in.)
- Front engagement roller centerline is 162 mm (6 3/8 in.) above the bottom of the container long sill.
- Front of container hold down skid is 5.94 m (19 ft, 5 3/4 in. from the centerline of the front engagement roller.
- Container hold down skids range from 991 mm (39 in.) to 1.12 m (44 in.) apart (inside to inside) and 1.37m (54 in.) to 1.46 m (57 1/2 in.) apart (outside to outside). The skid bottoms drop from 127 mm (5 in.) to 152 mm (6 in.) from the top of the container long sill.
- Container long sills (or rails) are constructed of 152 mm (6 in.)x 51 mm (2 in.) square tubing with 921 (36 1/4 in.) to 940 mm (37 in.) rail spacing inside to inside.
- Container long sills have approximately 152 mm (6 in.) clearance between the bottom of the rail and the bottom of the container cross members.

Hoist frames shall be equipped with a gravity activated container lock to prevent container movement while the hoist frame is in the down position.

The above information is provided using industry standard nomenclature relative to the characteristics and dimensions of CONTRACTOR supplied roll-on/roll-off containers. The information provided to SUBCONTRACTOR, although specific to available knowledge, is intended to ensure SUBCONTRACTOR provides handling equipment compatible with CONTRACTOR’S containers. Ultimately, the SUBCONTRACTOR is responsible for roll-on/roll-off container handling equipment that ensures the safety of personnel and safe operation of equipment during routine operations.

3.0 EXECUTION

3.1 FIELD OPERATIONS

3.1.1 Excavation Work Area

3.1.1.1 Exclusion Areas

No work shall be performed within the exclusion areas, as shown on Exhibit "F" Project Drawings. Any deviations shall require written approval by CONTRACTOR, and additional restrictions may apply.

3.1.1.2 Stripping

Strip Container Transfer Facility and haul roads along with any other areas required to facilitate installation and operation of facilities. Strip work and storage areas, as necessary, to eliminate uneven surfaces and potential fire hazards. Specific areas to be stripped shall be identified on construction drawings.

If necessary, areas shall be stripped to a nominal 152 mm (6 in.) depth in accordance with the approved construction drawings. Disposal of stripped materials shall be as directed in Section 3.1.6 of this specification.

3.1.1.3 Civil Surveying

Survey crew personnel shall be competent and experienced in performing land survey work. All work shall be performed using metric system under the direct supervision of a Land Surveyor registered in the State of Washington. Drawings and calculations shall be signed, sealed, and certified by a Land Surveyor registered in the State of Washington.

Standards of accuracy for all survey work shall be in accordance with Federal Geodetic Control Committee (FGCC) standards and the minimum standards as set forth in the WAC 332-130. The datum for the horizontal control network in Washington shall be NAD83. Elevations and benchmarks shall be provided in NGVD29 with a conversion to NAVD88. The class of control surveys shall be shown on all documents prepared.

Completed survey information shall be provided in both vertical datum for project review and approval purposes. Survey drawings shall be produced at a scale of 1 centimeter = 10 meters, with contours shown for each 0.5 meters of vertical relief in NGVD29. All survey drawings shall be created on a Computer Aided Design Drafting (CADD) system and shall be in accordance with BHI-DE-01, CADP-02. CADD drawings shall be submitted on a 3.5-in. diskette in AutoCAD™, latest version (dwg format). An ASCII file of the survey data as collected by an electronic data collection system and a printout of the data shall be submitted.

3.1.1.4 Drainage/Erosion Control

SUBCONTRACTOR shall provide channels or berms around excavations to intercept and direct water away from the work and silt fences to prevent materials from reaching the Columbia River consistent with the Hanford Stormwater NPDES Permit. Subcontractor shall submit to CONTRACTOR proposed method of ensuring water and other materials do not reach the Columbia River. SUBCONTRACTOR shall ensure that there is no accumulation of construction-related debris, soil, and dust suppression fluids along the silt fence. Construction activities between the silt fence and the ordinary high water mark are prohibited.

Excavations shall be maintained in a dewatered condition. All water entering the excavations, including seepage, snow or ice melt, and rainfall, shall be controlled and removed before personnel enter to perform work. Water removed from the excavation shall be stored in CONTRACTOR approved containers and subsequently sampled and analyzed by the CONTRACTOR prior to disposal. Water removed from the excavation may be used/recycled with CONTRACTOR approval. Methods such as channeling, harrowing, and/or addition of additives shall be considered. Only approved methods shall be employed. Contaminated material containing free water shall be dried prior to excavation. Uncontaminated materials that contain free water may be excavated with prior approval.

3.1.1.5 Excavation Safety

Excavations shall be performed in accordance with OSHA 29 CFR 1926. SUBCONTRACTOR shall document the criteria for each activity requiring a competent person. The excavation shall be inspected by the SUBCONTRACTOR's competent person prior to beginning work each shift. Inspections shall be documented and shall include review of administrative and engineering controls, as appropriate. No personnel or equipment shall enter the excavation until required corrective measures are completed and documented. Equipment and excavated materials shall not approach or be placed near the edge of excavations unless safety measures have been implemented.

Any excavation greater than 6.1 m (20ft) in depth shall be designed by a registered professional engineer in accordance with OSHA.

3.1.1.6 Inactive Excavations

The SUBCONTRACTOR shall secure access to open excavations by placing adequate physical barriers across any unsecured access points. Walkways or bridges shall be constructed and inspected in accordance with applicable OSHA requirements when an excavation requires access.

3.1.1.7 Access/Egress from Excavations

Access/egress from excavations shall be provided in accordance with OSHA 29 CFR 1910 and 1926.

3.1.1.8 Shoring and Bracing

Install and maintain shoring, sheeting, bracing, and sloping necessary to support the sides of the excavation to prevent any movement that may damage adjacent roadways, utilities, or structures, damage or delay work, or endanger the safety and health of personnel. Shoring, sheeting, bracing, and sloping shall be installed and maintained, as required, by OSHA and other applicable regulations and agencies.

3.1.1.9 Protection of Utilities

Active utilities shall be protected from damage and disruption of service during excavation activities. Methods for protection of utilities shall be submitted and approved prior to excavation. SUBCONTRACTOR shall be responsible for field verifying and locating all underground utilities prior to excavation activities. Should the SUBCONTRACTOR damage or place out of service any utilities, all associated costs for repair shall be borne by the SUBCONTRACTOR. The CONTRACTOR must be notified immediately of the incident and the corrective work shall be performed by the SUBCONTRACTOR within 24 hours after damage or placement out of service.

3.1.2 Earthwork

All earthwork associated with the construction of the Container Transfer Facility and the connecting roads shall be performed in accordance with the approved Earthwork and Excavated Materials Handling Plan.

3.1.3 Excavation

3.1.3.1 General

Excavations and operations shall be planned and executed in compliance with the applicable requirements in OSHA 29 CFR 1926, Subpart P - Excavations. Excavation has not been classified. Complete all excavation regardless of the type, nature, or condition of the materials encountered.

The most recent calculation for soil density in the 100 B/C Area estimates the density to be 2.25 metric tons per bank cubic meter (t/bcm) which equates to 1.90 tons per bank cubic yard (tons/bcy). However, the SUBCONTRACTOR can anticipate the density to fluctuate between 2.02 t/bcm (1.70 tons/bcy) and 2.49 t/bcm (2.10 tons/bcy).

3.1.3.2 Excavation Operations

Waste sites shall be excavated as shown on the construction drawings and in compliance with the Earthwork and Excavated Materials Handling Plan. Contaminated material shall be loaded directly into ERDF haul containers or (upon CONTRACTOR approval) stockpiled for temporary storage. With the exception of containers of material potentially designated as dangerous waste, containers shall be staged for pickup at a centralized Container Transfer Facility or a site-specific (temporary) Container Transfer Facility near the excavation, whichever is most practical. Containers with material potentially designated as dangerous waste shall remain within the source waste site AOC or be transported to the Dangerous Waste Storage Area. All loaded containers must meet radiological survey requirements prior to pickup and release from the radiological buffer area.

Prior to excavation, the CONTRACTOR will assign a waste profile to the material based on existing site characteristic information. All containerized materials will be assigned the currently designated waste profile until changes in waste characteristics warrant a revision of the waste profile.

CONTRACTOR will sample pipe in “sections” to support pipe close out efforts. The “sections” will be defined by the CONTRACTOR based on SUBCONTRACTORS means and methods.

3.1.3.3 Field Screening

CONTRACTOR will perform field screening for contaminants to assist in the establishment of current waste characteristics concurrently with the excavation of new materials. Newly exposed materials will be analyzed by CONTRACTOR using in situ measurements or samples of the materials to determine the radioactivity levels of the radionuclide contaminants. Excavation may be temporarily halted by CONTRACTOR to facilitate and safeguard the analytical work.

Newly exposed soils will also be periodically analyzed per the established sampling plan (sampling and analysis not within SUBCONTRACTOR scope of work) to determine the waste characteristics regarding other contaminants (e.g., organic or inorganic chemicals). Excavation may be temporarily halted by CONTRACTOR to facilitate and safeguard the sampling work.

The CONTRACTOR will determine the waste characteristics and the radiological classification of excavated material. Field screening will be used prior to and during excavation activities to immediately classify excavated material as contaminated or uncontaminated. Uncontaminated material may contain contaminants, which exceed cleanup levels, but cannot be readily detected by field screening. Quick turnaround analysis (24 to 72 hrs) will be used to verify uncontaminated material. Double handling will be

required if quick turnaround analysis indicates that initially designated uncontaminated material exceeds cleanup criteria.

CONTRACTOR will perform field screening intermittently throughout the excavation process and may be necessary at the excavation bucket. Field screening frequency will increase as excavation depth increases. If radiological screening results show increased radioactivity the frequency of field screening will increase. Particular attention will be paid to soil at pipe couplings, flanges, joints, valves, inspection manholes, and associated structures. Random screening of the spoils pile(s) or surface of the excavation will occur unless lithologic/color changes become apparent or buried debris and pipes are encountered. If these indicators are encountered the frequency of field screening will increase.

3.1.3.4 Verification Sampling

Upon completion of waste site excavation access to the excavation side wall and bottom soil will be required at discrete sample points for clean site verification sampling. Subcontractor shall provide access to sample points by 1) contouring the excavation and/or providing (and installing) shoring/ramps to permit manned entry in accordance with the requirements of OSHA and/or, 2) remotely retrieving soil from excavation side walls and bottom at locations determined by the CONTRACTOR. Any portion of equipment used for contouring or remotely retrieving soil (e.g., trackhoe bucket) shall be clean and free of radiological and chemical contamination so as not to cross contaminate the excavation. Should cross contamination occur, additional excavation and decontamination costs shall be borne by the SUBCONTRACTOR.

The term “free of radiological contamination” means contamination below 10 CFR 835 Appendix D levels.

After removal of contaminated material clean site verification sampling for pipelines shall occur in sections. The sections will be determined by CONTRACTOR based on SUBCONTRACTORS means and methods.

SUBCONTRACTOR shall store archived sample material, as directed by the CONTRACTOR, in a Radioactive Material Area (RMA), set up near the work area. During site demobilization the SUBCONTRACTOR will dispose of archived material (ship to ERDF or permanent on-site RMA as directed by the CONTRACTOR).

All spoils piles will be subject to sampling by the CONTRACTOR to determine if overburden material and other uncontaminated spoils are acceptable for use as backfill. Spoil piles shall be limited to 1.0 m (3 ft) lifts, allowing CONTRACTOR access to such spoils piles for sampling prior to placing the next lift. Handling of or addition to spoil piles will not be permitted after sampling without CONTRACTOR approval.

3.1.3.5 Cross Contamination of Excavated Areas

The excavation shall be sequenced such that areas already excavated are not cross contaminated. Cross contamination due to pipe removal and/or size reduction (from pipe scale, rust, etc.) shall be removed from the excavation or staging area upon completion of pipe removal and/or size reduction activities. Side slopes of excavations shall be protected to prevent contaminated materials from eroding or sloughing into and contaminating materials at a lower elevation. Any additional material removal and replacement due to cross contamination shall be performed at no additional expense to the CONTRACTOR.

3.1.3.6 Trenching and Potholing

Trenching and potholing may be required to assess contaminant distribution associated with pipelines and waste sites. The trenching technique shall be utilized to identify contamination associated with pipelines. The trench shall have a maximum width equal to width of the excavator bucket, a minimum depth of 4.57 m (15.0 ft), and a maximum depth of equal to the reach of the equipment.

The potholing technique shall be utilized to identify contaminant distribution associated with waste sites. The potholes shall have a maximum length of 3.05 m (10.0 ft), a maximum width of 3.05 m (10.0 ft), a minimum depth of 4.57 m (15.0 ft), and a maximum depth of equal to the reach of the equipment.

3.1.3.7 Work Zone Delineation and Radiological Control

The work area currently exists within a radiological controlled area (reactor site area). Most of the waste sites are currently posted as an underground radioactive material area. Some sites are posted as a soil contamination area and some are posted as a contamination area.

The delineation and posting of these radiological work areas will be used to maintain radiological control of the work area and to minimize the potential for cross contamination outside of the contaminated work area. Work zone delineation and radiological control shall comply with the CONTRACTOR's radiological control program which is implemented through BHI-SH-02, Vols. 1 and 2 and BHI-SH-04. Any work area where radioactive contamination exists or is likely to exist will be posted by the SUBCONTRACTOR as a Contaminated Area (CA), a Soil Contamination Area (SCA), or other as directed by the CONTRACTOR. A Radiological Buffer Area (RBA) will be posted around contaminated work area (CA, SCA, etc.), as necessary, by the SUBCONTRACTOR, as directed by the CONTRACTOR. All equipment and personnel will be subject to a contamination survey upon exit from a radiologically posted area, as directed by the CONTRACTOR. Where necessary to facilitate the movement of containers when using a temporary container staging area, control zone/work area boundaries may be moved after containers are surveyed and released by the CONTRACTOR. Decontamination may be required to release personnel or equipment from areas containing radioactive contamination.

An area will be designated as the exit point from any contamination area. These exits should be chosen to maintain exposure as low as reasonably achievable. This area shall be for the purpose of Anti-C disrobing, personnel surveying, and potential decontamination. The exit area will include a step-off pad, laundry receptacle (for contaminated Anti-Cs), shoe cover receptacle, and trash receptacle, as necessary.

The SUBCONTRACTOR shall provide and maintain Radioactive Material Areas (RMA) for the storage of radioactive material and equipment used to support radiological work. Only labeled radioactive material may be stored in the RMA without written approval from CONTRACTOR. The RMA shall be posted by the SUBCONTRACTOR as directed by the CONTRACTOR. The RMA will contain material stored in sealed bags, boxes, drums, transport containers, etc. The SUBCONTRACTOR will ensure radioactive material is protected from intrusion of the elements (i.e., precipitation, runoff, dust, etc.) or will move the RMA, as necessary, to keep the stored material protected from the elements.

3.1.4 Separation of Excavated Materials

3.1.4.1 General

All excavated materials will be considered either as uncontaminated material (subject to verification), contaminated material, or contaminated material potentially designated as dangerous waste. Specific form waste, such as asbestos, lead, or demolition debris, will be categorized as either uncontaminated material, contaminated material, or material potentially designated as dangerous waste, dependent upon the level of contamination.

3.1.4.2 Uncontaminated Materials

Uncontaminated material is most likely to occur in waste site overburden and side slope areas. Verification that these materials have contaminant levels below clean-up levels will be required prior to use as backfill. The CONTRACTOR will perform the verification. Whenever feasible, efforts shall be made to minimize the amount of materials ultimately disposed of at the ERDF. After clean verification the SUBCONTRACTOR shall identify to the CONTRACTOR the area in which the uncontaminated materials will be used as backfill.

3.1.4.3 Contaminated Materials

Contaminated materials and contaminated materials potentially designated as dangerous waste will typically be beneath waste site overburden. Contaminated materials will be assigned a waste profile based on field screening by the CONTRACTOR.

The waste profile may change, as directed by the CONTRACTOR's resident engineer, based on changing field characteristics detected by field screening.

Asbestos containing materials encountered during excavation work shall be managed in compliance with 40 CFR 61.140 through 157. Asbestos-containing materials requiring

removal shall be addressed by a supervisor and work crew that meet asbestos training requirements and comply with all the SUBCONTRACTOR health and safety programs. Asbestos-containing materials shall be packaged for removal in compliance with the ERDF waste acceptance criteria.

Lead and lead-containing material shall be assumed to be designated as a dangerous waste and shall be managed in compliance with 29 CFR 1926.62 and WAC 173-303. Lead and lead-containing materials requiring removal shall be addressed by a supervisor and work crew that meet lead training requirements and comply with all the SUBCONTRACTOR health and safety programs.

Contaminated material containing free water, as determined by WAC 173-303-140 (4) (b) (Method 9095 - The Paint Filter Liquids Test), shall be dried before transport to the Container Transfer Facility.

3.1.5 Demolition and Removal of Abandoned Structures and Utilities

Demolish and remove all asphalt, concrete, wooden or steel structures, piping and miscellaneous small-diameter utility piping, conduits, and wiring as shown on the project drawings and as directed by the CONTRACTOR. Demolition shall consist of cutting, size reducing, demolishing, or reducing to rubble. Confirm that existing abandoned utilities are inactive before demolition.

Concrete structures associated with the pipelines such as pipe anchors, junction boxes, encasements, and expansion boxes shall be demolished and removed concurrently with pipeline excavation and removal.

Containers shall have a 150 mm (6 in.) bed of soil underlying concrete and steel debris and pipe sections.

3.1.5.1 Size Reduction

Concrete (including concrete pipe) shall be loaded in one of two different forms: 1) reduced to rubble with a maximum dimension of approximately 305 mm (1 ft), 2) large blocks or slabs that fit inside a container without wedging into the chamfered portion of the container or extend above the walls, not to exceed the payload limit for the container (18.1 t [20.0 tons]), not to exceed 3.05 m (10 ft) in length, and loaded toward the rear of the box. All rebar must be cut flush with the surface. Loose rebar should be cut to lengths of approximately 1.22 m (4 ft) and mixed with soil to the extent practical and placed to prevent damage to the tarp during handling.

Steel plate shall not exceed 1.22 m (4 ft) in width or 3.05 m (10 ft) in length, shall not extend above the side walls of the container, shall not be bent over or folded to fit into containers. Steel plate shall not be forced or pushed into the container in a manner that

would inhibit it from sliding out of the container when dumped. Cribbing or soil bedding will be necessary to avoid binding of steel plate during unloading.

All extraneous attachments or extensions (e.g., flanges, valves, welded plate, protruding reinforcing steel from reinforced concrete debris, etc.) to individual pieces of pipe shall be removed.

Steel and cast iron pipe with diameters \geq DN1200 (48 in.) nominal shall, at a minimum, be split in thirds and sized less than 3.05 m (10 ft) in length. These pipes shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the load limit per container. These pipe sections shall not extend above the side walls of the container.

Steel and cast iron pipe with diameters \geq DN450 (18 in.) and $<$ DN1200 (48 in.) nominal shall, at a minimum, be split in half and sized less than 3.05 m (10 ft) in length. These pipes shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the load limit per container. These pipe sections shall not extend above the sidewalls of the container.

Steel and cast iron pipe with diameters \geq DN50 (2 in.) and $<$ DN450 (18 in.) nominal are not required to be split and may be loaded in lengths up to 3.05 m (10 ft). Tube steel sections shall have open ends to permit entry of grout.

Steel and cast iron pipe with diameters $<$ DN50 (2 in.) nominal may be shipped with split, larger-sized pipe, or metal sheet/plate in lengths up to 3.05 m (10 ft).

Any individual piece of miscellaneous metals/building debris/structural steel/conduit shall not exceed 1.22 m (4 ft) in width, 610 mm (2 ft) in depth, or 3.05 m (10 ft) in length. The waste shall not be bent over or folded to fit into containers and shall be shipped separately from soils in containers to the maximum extent possible (except for bedding beneath the material). The waste shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading/unloading operations.

Should any discrepancy be discovered between this specification and Attachment 1, the more restrictive shall apply with the exception of the container payload which is 18.1t (20 tons).

Debris is permitted to be loaded into all containers, top and side hinged.

SUBCONTRACTOR shall obtain approval from CONTRACTOR and coordinate its means and methods prior to loading large and unique shaped debris into side hinged containers to minimize undue damage to containers and facilitate unloading at the ERDF.

3.1.5.2 Asbestos-Containing Materials

Removal of ACM shall be performed under the direct supervision of a Certified Asbestos Supervisor/Competent Person.

SUBCONTRACTOR is responsible for all monitoring and posting requirements during asbestos removal activities of the pipelines. Clearance sampling (air sampling) associated with pipe abatement is not required, visual inspection will support ACM down posting. The SUBCONTRACTOR shall follow the dust control measures outlined in section 3.2.1 of this document.

Circumferential cuts for size reduction shall be performed by either torch cutting or with mechanical shears. SUBCONTRACTOR shall abate the asbestos from pipe areas requiring torch cutting prior to start of cutting operations. Lengthwise cuts shall be made with mechanical shears. Mechanical shears shall be Caterpillar MP 20 or approved equal. SUBCONTRACTOR shall control emissions by water misting while using mechanical shears if asbestos is not abated prior to shearing. The pipe section may be sheared in place or be transported to a designated staging or segmenting area. At segmenting areas, pipe segmenting will be performed on an area of contaminated soil that will be disposed of at the ERDF after completion of segmenting operations. The area designated as a segmenting area will be coordinated in the field with the CONTRACTOR,

Subcontractor shall remove and prepare for disposal at ERDF all soil which is cross-contaminated with asbestos during size reduction activities.

Clearly visible pieces of ACM that fall off the pipe, in the trench or at the staging or segmenting area, shall be manually removed, wetted, double-bagged, and shipped separately in containers or packages provided by the CONTRACTOR, complying with Section 4.2.2 of the ERDF waste acceptance criteria and the Supplemental Waste Acceptance Criteria for Bulk Shipments to the ERDF (Attachment 1). Bags shall be limited to a maximum weight of 18.1 kg (40 lbs.) in order to be handled by an individual worker.

Residual ACM from the pipe removal process that is not visible, could remain in place in the trench, or could be excavated as part of any necessary clean up of soil contamination (radiological and nonradiological) resulting from the pipe segmenting, water misting or other operations.

All segmented pipe bearing ACM shall be placed in double lined/sealed (minimum 6-mil plastic sheeting) transport containers, and shipped to the ERDF for disposal.

3.1.5.3 Exposed Piping

All remaining piping and conduits exposed at the extents of the excavations shall be capped or blocked to protect workers and prevent entrance to the pipes. Nominal DN300 (12 in.)

pipes and smaller shall be sealed with grout or crushed shut if feasible. Pipes >DN300 (12 in.) shall be capped by first wrapping and taping with 10-mil reinforced polypropylene bags or sheets and then boxing the end with 3/4-in. exterior grade plywood as necessary for protection from backfill materials.

Remaining piping at the outfall structures shall be sealed to protect workers, prevent entrance, and prevent the intrusion of soil, debris, and groundwater after backfilling. Reinforced concrete pipes and enclosed spillways shall be sealed with grout or concrete. A preliminary plug constructed of soil and debris may be installed, if needed, to enable the grout seal to set in place. Steel pipe shall be sealed with 6 mm (0.25 inch) thick steel plate. The steel plate shall be continuously welded around the circumference of the pipe to prevent the intrusion of water.

The concrete box sewer shall be sealed with a preliminary plug constructed of uncontaminated soil and debris and grouted prior to backfilling if it is damaged during pipeline excavation.

3.1.6 Disposal of Materials

3.1.6.1 Uncontaminated Material

Uncontaminated plant materials obtained from site stripping shall be transported to the Uncontaminated Soil Storage Area and placed in a separate stockpile shown on the construction drawings. All other uncontaminated materials shall be stored or disposed of as specified or approved.

Uncontaminated soil material ranging in size from silt to boulders may be stockpiled near the excavation from which it came. Double handling and transport of this material will be required if the material cannot be verified as uncontaminated or the stockpile location interferes with ongoing construction/remediation activities (e.g., contamination is detected in soil underlying the stockpiles). Double handling and transport of the soil shall be done at no additional cost to the CONTRACTOR. Containers for transporting uncontaminated material are to be supplied by the SUBCONTRACTOR.

3.1.6.2 Contaminated Material

Contaminated material shall be loaded into containers and transported to the Container Transfer Facility where the material will be staged or transferred to transportation vehicles for ERDF disposal. The contaminated material placed in containers shall comply with the moisture content and other applicable requirements of the ERDF Waste Acceptance Criteria and Supplemental Waste Acceptance Criteria for Bulk Shipments to the ERDF (Attachment 1).

3.1.6.3 Contaminated Material Designated as Potential Dangerous Waste

Some contaminated material might designate as dangerous waste. Identifying material that designates as potentially dangerous waste is not within the scope of work and shall be the responsibility of the CONTRACTOR. The CONTRACTOR shall determine whether the material shall remain within the AOC (either on the ground or in containers) or be transferred to the Dangerous Waste Storage Area. Material that potentially designates as dangerous waste and that remains within the AOC is not subject to dangerous waste storage requirements. Material that potentially designates as dangerous waste shall be managed in accordance with the substantive requirements of WAC 173-303 from the time it leaves the AOC, even if it is subsequently returned to the AOC. Material that potentially designates as dangerous waste shall be placed in CONTRACTOR-supplied containers (ERDF haul containers excluded) and transported to and staged at the Dangerous Waste Storage Area shown on the construction drawings. Materials determined by the CONTRACTOR not to be dangerous waste shall be disposed at ERDF. Double handling will be required for those materials determined not to be dangerous waste and may be required for materials determined to be dangerous waste.

3.1.7 Excavated Materials Handling

3.1.7.1 Container Liner

Install the container liner in each container prior to loading contaminated materials. The container liner shall be placed inside the container and draped over the sides of the container. After materials are loaded into the container, the liner shall be folded and secured over the materials.

3.1.7.2 Container Loading

Containers shall be loaded evenly throughout. Material shall be placed so as not to cause any damage to the container. Large materials shall not be placed directly against the rear gate. Material must be able to be freely discharged when emptied at ERDF. SUBCONTRACTOR shall be responsible for removing oversize material that does not freely discharge while emptying at ERDF.

3.1.7.3 Prevention of Liquid Accumulation in Containers

All containers (empty/full) shall be protected from the accumulation of free liquids. SUBCONTRACTOR shall not apply excessive amounts of water, which may cause soil to become saturated when placed into the containers. SUBCONTRACTOR shall be responsible for preventing the release of water from containers waiting for transport to ERDF.

3.1.8 Backfilling of Excavations

3.1.8.1 Backfill

Excavations shall be backfilled with approved backfill materials and contoured to match the surrounding ground surface elevation. Site restoration at all waste sites shall be limited to backfilling and shall not include revegetation. For excavations greater than or equal to 15 ft in depth, some contaminated soil may be left in place (consistent with clean-up requirements), which may require radiological controls and SUBCONTRACTOR considerations for placement and compaction.

3.1.8.2 Compaction

Backfill shall be placed and compacted in accordance with WSDOT M41-10, 2-03.3(14)C, "Compacting Earth Embankments", Method A or approved equal method.

3.2 MISCELLANEOUS FIELD SERVICES

3.2.1 Moisture and Dust Control

No visible dust shall be allowed; dust shall be controlled by water spraying or other approved methods. The active excavation face(s) that are exposed for periods of less than 24 hours shall receive dust control measures during excavation operations, such as spray application of water. Excavated areas, and/or contaminated or potentially contaminated stockpiles, that will be inactive for periods of greater than 24 hours shall receive positive dust control measures other than water alone, such as surficial suppressants (Soil Sement™ or CONTRACTOR approved equivalent), or penetrating crusting agents (magnesium chloride or CONTRACTOR approved equivalent). SUBCONTRACTOR shall also apply approved crusting agent or fixants to any disturbed portion of the contamination area if the sustained overnight wind speed is predicted to exceed 8.94 m/s (20 mph) based on the Hanford Meteorological Station or National Weather Service Station after the 8:00 a.m. forecast. A crusting agent or fixant shall also be applied when excavation activities are suspended due to sustained high winds. Fixatives will not be applied when the contaminated soils are frozen, or it is raining, snowing or other freezing precipitation is falling at the end of work operations. Dust suppressant application equipment shall be provided at no additional expense to the CONTRACTOR. Upon approval, conditions may allow use of recycled decontamination water.

Dust from excavation and haul operations shall be controlled through engineering and administrative controls. Controlled locations include, but are not limited to, the limits of waste site excavations and access ramps, roads, parking areas, the Container Transfer Facility, and storage areas, as shown on the construction drawings. The container queue and haul roads shall receive positive dust control measures other than water alone that are penetrating and long lasting, such as penetrating crusting agents (magnesium chloride). Care shall be taken not to produce ponding of any applied material on the surface.

3.2.2 Roads

Construct and maintain roads in accordance with the construction drawings and plans. Decontaminate all roadways as necessary prior to project completion and systematically scarify entire surface of temporary haul roads constructed by SUBCONTRACTOR to a depth 0.305 m (1 ft).

The road surface shall be maintained true to line and grade and cross-section by blading, watering, and rolling crushed surface material.

Existing pavement that becomes loose shall be removed and disposed of, as appropriate and replaced with quality and thickness equal to existing.

Haul roads will be constructed to provide access for the ERDF haul CONTRACTOR and shall conform to the criteria for ERDF haul vehicles (maximum 8% grade, minimum width of 4.0 m [13.1 ft] each way, minimum turning radius of 35.1 m [115 ft]). Where there is a potential of underground contamination, excavating will not be permitted in the construction of these haul roads.

For re-route and road improvement/construction, roads shall be bladed smooth, the subgrade compacted, and crushed surfacing material placed to a compacted depth of 6" (minimum of 2 compacted lifts). Compaction shall be achieved by a minimum of 3 passes with a 8.16 t (9 ton) static weight vibratory roller with 17.7 t (19.5 ton) dynamic force. The access road re-routes shall be 6.10 m (20 ft) wide with a maximum grade of 6%, and a minimum turning radius of 18.3 m (60 ft).

3.2.3 Container Transfer Facility

There are two existing Container Transfer Facilities available for use. If the existing Container Transfer Facilities are used the SUBCONTRACTOR shall maintain them to the current line and grade. If the SUBCONTRACTOR builds a new facility it shall meet the following requirements:

- Surface may be up to a maximum of 1% slope.
- Container loading/unloading surface area shall be 6 in. minimum, compacted, crushed surfacing material. Compaction shall be achieved by a minimum of three passes with a 8.16 t (9 ton) static weight ton vibratory roller with 17.7 t (19.5 ton) dynamic force.
- Turning radius minimum of 35.1 m (115 ft).
- Tractor trailer container loading/unloading area large enough to avoid a jack-knife maneuver to access containers. In line combination tractor/trailer with container (on ground) length is approximately 27.4 m (90 ft).

- The Container Transfer Facility shall be sized to accommodate one and a half times the anticipated SUBCONTRACTOR's daily container production rate; minimum spacing between rows of containers shall be 1.2 m (4 ft).
- Entrance road into the Container Transfer Facility shall be of sufficient width to safely accommodate two-way traffic with heavy tractor/trailer trucks.
- Container loading/unloading areas shall be designed for circular traffic pattern.

3.2.4 Illumination Requirements

Task lighting (portable light plant, light towers, etc.) for full illumination of the queue shall be provided and installed in accordance with the manufacturer's recommendations, Illuminating Engineering Society (IES), National Electrical Code (NEC), and OSHA requirements.

Temporary lighting shall be required in the container queue area to permit delivery and/or pickup of containers during off shift hours and in the winter months (October – March) to support inventory control of containers.

3.2.5 Security Requirements

Security of the reactor buildings must be maintained during remedial action activities. Existing security fences may be removed for remedial action activities but the areas must be secured by lock or guard when no activity is occurring. Reinstall security fences removed during this scope of work at conclusion of activity.

SUBCONTRACTOR use of existing security fence locking gates shall be coordinated with the CONTRACTOR.

3.2.6 Water Fill Station

The water fill station shall be connected to a fire hydrant as shown on the project drawings. The connection shall use only the 63 mm (2.5 inch) hydrant outlet with a non-rising-stem gate valve with an 63 mm (2.5 inch) NH female inlet and a 38 mm (1.5 inch) NH male or female outlet.

Hydrants shall be opened by others with a SUBCONTRACTOR supplied, CONTRACTOR approved hydrant wrench. Hydrant and hose shall be depressurized when not in use. Hydrant shall be used in the fully open or fully closed position only.

4.0 YEAR 2000 WARRANTY

Any computer application or system or equipment provided under this specification shall be Year 2000 Compliant. As used in this warranty, the term "Year 2000 Compliant" means that the Product, when configured and used according to the documented instructions will without manual intervention or interruption:


- Correctly handle and process date information before, during and after January 1, 2000, accepting date input, proving date output and performing calculations, including but not limited to sorting and sequencing, on dates or portions of dates;
- Function according to the documentation during and after January 1, 2000 without changes in operation resulting from the advent of the new century;
- Where appropriate, respond to two-digit date input in a way that resolves any ambiguity as to century in a disclosed, defined and predetermined manner;
- Store and provide input of date information in ways that are unambiguous as to century; and
- Manage the leap year occurring in the year 2000, following the quad-centennial rule. The "quad-centennial rule" means (a) if the year is divisible by 4, it is a leap year, UNLESS (b) the year is also divisible by 100, then it is not a leap year, UNLESS (c) the year is also divisible by 400, then it is a leap year.

SUBCONTRACTOR also warrants that the production/manufacture, transportation and delivery of any goods, specifications, drawings, studies or any other segment of the work to be supplied hereunder will be Year 2000 Compliant and will not be materially adversely impacted as a result of any failure to be Year 2000 Compliant.

Source of Definition: British Standards Institute

Note: CONTRACTOR may, at its option, accept a definition of "Year 2000 Compliant" that is the substantive equivalent of the definition above.

**SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA
FOR BULK SHIPMENTS TO THE
ENVIRONMENTAL RESTORATION DISPOSAL FACILITY**

1	7/8/97	Concrete and Rebar Revision	M.A. Casbon	S.Thieme	A. Greif	A.R.Michael
0	4/14/97	ISSUED FOR PROGRAM-WIDE USE	D. R. Myers	S.Thieme	S. Demers	J. Darby
REV.	DATE	REASON FOR REVISION	ORIGINATOR	FIELD SUPPORT	RAD ENGINEER	PROJECT ENGINEER
		RICHLAND ENVIRONMENTAL RESTORATION PROJECT		JOB NO. 22192		
		CRITERIA NO. 0000X - DC - W0001				
		SHEET 1 of 5				

SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA

July 8, 1997

FOR BULK SHIPMENTS TO ERDF

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SUPPLEMENTAL WASTE ACCEPTANCE CRITERIA FOR BULK SHIPMENTS TO ERDF

1.0 GENERAL

Waste streams that comply with the ERDF Waste Acceptance Criteria and that meet the supplemental criteria provided in Section 1.0 can be accepted for disposal at ERDF as bulk shipments. Waste streams that comply with the ERDF Waste Acceptance Criteria but do not meet the supplemental criteria will be evaluated on a case-by-case basis for acceptance by ERDF for disposal. The process for the case-by-case evaluation is described in Section 2.0 below.

1.1 RADIOLOGICAL CONTAMINATION LIMITS

The below listed limits are recommendations from Operational Radiological Controls for the protection of the personnel involved in the disposal, spread and compaction of waste at ERDF. These limits are intended to be an extension of the ERDF Waste Acceptance Criteria (WAC).

1. No waste will have a loose (smearable) surface contamination in excess of 100,000 dpm/100cm² or 400 dpm/100cm² when averaged over the entire surface of the material.
2. No waste will have fixed contamination in excess of 75 mRad/hr/100cm² or 80,000 dpm/100cm² when averaged over the entire surface of the material.
3. No waste will have a radiation level reading in excess of 50 mR/hr when measured 30 centimeters from the surface.

1.2 PHYSICAL LIMITS

1.2.1 Concrete Debris

Concrete may be sent to the ERDF in one of two different forms. 1) Reduced to rubble with an maximum dimension of approximately 1 foot. It is preferred that this rubble be mixed with other waste soil so that it can be handled as soil at the ERDF. 2) Large blocks or slabs may be shipped under the following criteria: It must fit inside an RCI container without wedging into the chamfered portion of the container, it must not exceed the gross weight limit for the container (40,000 lb including the container), must not extend above the side walls of the container, shall not exceed 17 feet in length, and must be loaded toward the rear of the box. If the block or slab is wider than the bottom of the container it must be placed in the box in so that it will not become wedged in the chamfered portion of the box. Large blocks of concrete should only be loaded into 700 or 400 series containers ("barn-door" type

containers). All rebar must be cut flush with the surface.

1.2.2 Steel Plate

Steel plate shall not exceed 4 ft. in width or 17 ft. in length. Steel plate shall not be bent over or folded to fit in containers and shall be shipped separate from soils in containers to the maximum extent possible. Steel plates shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading /unloading operations. Steel plate shall not be forced or pushed into the container in a manner that would inhibit them from sliding out of the container when dumped. Based on field engineering evaluation, cribbing may be necessary to avoid binding of steel plate during unloading.

1.2.3 Piping/Tube Steel

Diameters 18-in. nominal shall, at a minimum, be split in half and shall be sized less than 17 ft. in length. These pipes shall be nested (placed one length inside the other, with open side up) within the containers to maximize the load without exceeding the 19.3 ton load limit per container. These pipe sections shall not extend above the side walls of the container -- to interfere with the plastic covers and tarps placed over the containers or to become unstable during loading /unloading operations.

Diameters 2-in. and < 18-in. nominal are not required to be split and may be loaded in lengths up to 17 ft.. Tube steel sections shall have open ends to permit entry of grout.

Diameters < 2-in. nominal may be direct buried at ERDF. may be shipped with split, larger-sized pipe, or metal sheet/plate in lengths up to 17 ft..

Piping with Asbestos Containing Materials (ACM) attached must have all ACM removed from the piping prior to shipping. Also, the ACM must be properly wetted, handled, and packaged as well as shipped separately complying with Section 4.2.2 of the WAC.

1.2.4 Regulated Asbestos Containing Material

Asbestos Containing Materials (ACM), shall be wetted, double-bagged, and shall be shipped separately in RCIE containers or packages provided by the project. complying with Section 4.2.2 of the WAC. Bags shall be limited to a maximum weight of 40 lbs. in order to be handled by an individual worker.

1.2.5 Misc Metals/Building Debris/Structural Steel/Conduit

Any individual piece shall not exceed 4 ft. in width, 2 ft. in depth, or 17 ft. in length. The waste shall not be bent over or folded to fit in containers and shall be shipped separate from soils in containers to the maximum extent possible. The waste shall not extend above the side walls of the container, and shall not interfere with the tarps placed over the containers, or be loaded in the containers so as to become unstable during loading /unloading operations.

1.2.6 Equipment/Containerized (Barrels/Boxes) Waste

Equipment and containerized waste shall meet the requirements of the WAC, shall not exceed the radiological contamination limits of Section 1.1 of this document, and be segregated from the other wastes so that the waste can be placed and compacted with construction equipment to reduce void space for incorporation into the structural fill.

1.2.7 Soft Waste

Soft waste shall meet the requirements of the WAC, not exceed the radiological contamination limits of Section 1.1 of this document, and be segregated from the other wastes so that the soft waste can be spread in thin layers for incorporation into the structural fill.

1.2.8 Rebar

Rebar should be cut to lengths of approximately four feet and mixed with soil to the extent practical. Rebar pieces from D&D projects where soil is not common can be placed in RCI containers with other hard debris.

2.0 SPECIAL HANDLED WASTE

Waste streams that comply with the ERDF Waste Acceptance Criteria, but do not meet the supplemental criteria provided in Section 1.0 will be considered for disposal at ERDF on a case-by-case basis. Items such as the following examples may qualify in this category:

Equipment & Large Pumps

Work Tables

Large Doors

Sludge/Sediment

Aluminum

Piping to be shipped with asbestos attached

Containerized Waste that can not be opened/ruptured during compaction activities at ERDF

The project (waste generator) is responsible for identifying standard waste streams, volume estimates, and generation schedules and forwarding this information to the ERDF Project Engineer in order to initiate joint development of supplemental waste acceptance criteria for the project's special handled

waste.

Specific information on waste stream will be size, level of contamination, material, void space, compactability, and quantity of material will also be provided by the project (waste generator). This information will be provided to the ERDF Project Engineer in writing and will be evaluated to determine additional waste preparation and packaging requirements.

July 8, 1997